I CLAIM:

1. A seal for a rotary shaft comprising a housing having a generally cylindrical internal surface for receiving the shaft, first and second internal annular grooves spaced longitudinally of and encircling said internal surface and each adapted to receive an O-ring for contact with the external surface of the shaft and against which the shaft rotates in use, inlet and outlet ports for a cooling fluid extending through the housing into said generally cylindrical internal surface of the housing at locations spaced angularly about the housing and between said O-rings, whereby, when a shaft is received in said housing, an annular chamber is defined between the shaft and the housing intermediate the two O-rings, through which a cooling fluid can be circulated via said ports, and means for creating a positive cooling fluid pressure within said chamber, the O-rings being deformable under said pressure to seal against the rotary shaft.

2. A seal as claimed in claim 1, wherein said generally cylindrical internal surface of the housing is enlarged radially outwardly in the area of said annular chamber as compared with the diameter of the surface outwardly of said grooves.

3. A seal as claimed in claim 1, wherein said external surface of the shaft is defined by a replaceable sleeve which is received within said generally cylindrical internal surface of the seal housing in contact with said O-rings.

4. A seal as claimed in claim 1, wherein said housing has a generally cylindrical external surface and is dimensioned to be received in a seal housing of a conventional centrifugal pump.

5. A seal as claimed in claim 4, wherein said housing includes an outwardly projecting annular flange at an outer end of the housing, the

flange having an inner surface provided with a gasket for sealing against a corresponding face of said seal housing.

6. A seal as claimed in claim 5, wherein said cylindrical housing has an annular end face at an end of the housing remote from the flange, said face being provided with a gasket for sealing internally within the seal housing.

7. A seal as claimed in claim 5, further comprising an annular lip seal extending inwardly of the housing at the location of said flange.

8. A seal as claimed in claim 1, wherein said fluid inlet and outlet ports are disposed generally in diametrally opposed locations around said housing for communication respectively with a supply of said fluid and a throttle valve which is operable to control fluid flow from said outlet port, said throttle valve comprising said means for producing a positive cooling fluid pressure within said chamber.

9. A seal as claimed in claim 1 for a rotary shaft having a surface speed greater than 200 ft/min.

10. A method of sealing a rotary shaft against fluid leakage along the shaft, comprising the steps of:

providing a seal comprising: a housing having a generally cylindrical internal surface which receives the shaft and first and second internal annular grooves which are spaced longitudinally of and encircle the housing, each of said grooves receiving an O-ring which makes contact with the external surface of the shaft and against which the shaft rotates in use; and an annular chamber defined between the shaft and the housing intermediate the two O-rings; and,

circulating a cooling fluid through said annular chamber under pressure to cause the O-rings to deform and seal against the rotary shaft.

11. A method as claimed in claim 10, wherein said step of circulating a cooling fluid through said annular chamber under pressure comprises introducing fluid into the chamber from an inlet at a supply pressure and conducting fluid from the chamber through an outlet while throttling the flow of fluid to provide a desired fluid pressure within the chamber.

12. A method as claimed in claim 11, comprising the further step of monitoring leakage along the shaft and, in the event that leakage is detected, reducing the flow of fluid from said outlet so as to increase pressure within the chamber.

13. A method as claimed in claim 10, wherein the fluid circulated through the chamber is water and the pressure in the chamber is in the range 20 - 30 psi.

14. A method as claimed in claim 13, wherein the water is circulated through the chamber at a flow rate of 5 to 10 imperial gallons per minute.

15. A method as claimed in claim 10, for sealing a rotary shaft having a surface speed greater than 200 ft/min.

16. A method of sealing a rotary drive shaft of a centrifugal pump against fluid leakage along the shaft, the method comprising the steps of:

providing a seal comprising: a housing having a generally cylindrical internal surface which receives the shaft and first and second internal annular grooves which are spaced longitudinally of and encircle the housing, each of said grooves receiving an O-ring which makes contact with the external surface of the shaft and against which the shaft rotates in use; and an annular chamber defined between the shaft and the housing

intermediate the two O-rings;

rotating said shaft at a linear surface speed in a range from 200 ft/min to 4,713 ft/min; and,

circulating a cooling fluid through said annular chamber under pressure to cause the O-rings to deform and seal against the rotary shaft.